

APPENDIX F
FS MITIGATION MEASURES
AND BACKGROUND

Appendix F

FS Mitigation Measures and Background

This appendix provides additional information regarding U.S. Forest Service (FS) land management. First, mitigation measures specific to the FS are listed. Second, background information is provided, including a list of documents that guide FS land management and samples of standards and guidelines from those documents that may affect Bonneville's vegetation management on those lands.

Mitigation Measures Specific to FS

This section lists examples of additional mitigation measures specific to managing vegetation on rights-of-way or other Bonneville electrical facilities on FS-managed lands. These mitigation measures are in addition to those listed in **Chapter III, Planning Step 2.) Identify surrounding land use and landowners/mangers.**

These mitigation measures are to be used as a tool to anticipate issues that may need to be addressed and documents that may need to be consulted for developing or revising site-specific vegetation management plans. These measures **do not replace the need to coordinate with the FS for development of the plans and for measures appropriate to any given forest.** Vegetation management plans should be developed or revised to be consistent with the Record of Decision of this EIS.

The measures were developed based on current FS land and resource management planning documents, but are not "all inclusive" of the measures that may apply. Because these planning documents are revised and supplemented over time, the following mitigation measures are also subject to revisions.

For FS-managed lands, project managers would apply the following measures, as appropriate.

- Proposals for herbicide use will be subject to review and either concurrence or approval by the appropriate Forest Officer.

- *If using herbicides*, use only those herbicides approved for both FS use and Bonneville use. Determine appropriate herbicides when coordinating with the appropriate forest. For many FS regions some or all of the following list *may* apply::

Bromacil	Picloram
Dicamba	Triclopyr
Glyphosate	Tebuthiuron
Hexazinone	2,4-D.

- *If using herbicides in Lolo National Forest*, use only the following herbicides that have been reviewed and approved for use in this Forest: dicamba, glyphosate, picloram, and 2,4-D.
- In Region 6, report numbers of acres treated and method of treatment (such as manual or chemical) to the Forest Pesticide Use Coordinator within a fiscal year.
- *For threatened and endangered species*, follow mitigation measures identified in **Chapter III, Planning Step 3.) Identify natural resources**, including mitigation measures for spotted owl and marbled murrelet.
- *For FS-designated sensitive plant and animal species*, use mitigation measures so as not to disturb the species (such as timing restrictions for actions, or use of selective control methods).
- Leave felled trees on-site, when appropriate to meet FS coarse-woody-debris objectives.
- Determine vegetation debris disposal based on FS input.
- *If reseeded in Late Successional Reserves*, use native species unless the use of non-native species is approved. Seed mixtures are to be approved by the appropriate FS representative. Consider topping trees as an alternative to felling.
- For cultural resources, follow mitigation measures identified in **Chapter III, 3. Identify natural resources**.
- Do not remove vegetation in spanned canyons if clearance heights are met.

The different FS documents and regions have different water buffers. Bonneville will abide by the six mitigation measures within these water buffers described in Tables F-1 and F-2.

- Do not use ground-disturbing methods (such as blading) within FS-designated water buffer zones.
- Comply with appropriate Forest Plan designated buffers unless FS allows a variance.
- Do not use any localized, broadcast, or aerial herbicide applications within FS-designated water buffer zones. (In some cases, spot applications may be used.)
- *If using spot applications within water buffer zones, permit them no closer than 3 m (10 ft.) from water's edge (unless the herbicide label states that it is appropriate for use in water).*
- Use only selective control methods (manual, spot herbicide applications), and take care not to affect non-target vegetation.
- Leave vegetation intact, if possible.

Table E-1: Riparian Reserves and Water Buffers

Northwest Forest Plan Riparian Reserves are defined in the following terms:	
Stream Type	Buffer Size
Fish-bearing streams	The area on each side of the stream equal to the height of two site-potential trees, or 91-m (300-ft.) slope distance, whichever is greater.
Permanently flowing non-fish-bearing streams	The area on each side of the stream equal to the height of one site-potential tree, or 45.7-m (150-ft.) slope distance, whichever is greater.
Lakes and natural ponds	The body of water and the area to the outer edges of riparian vegetation, or to a distance equal to the height of two site-potential trees, or 91-m (300-ft.) slope distance, whichever is greater.
Constructed ponds and reservoirs and wetlands greater than one acre	The area from the edge of the wetland or the maximum pool elevation to a distance equal to the height of one site-potential tree, or 45.7-m (150-ft.) slope distance, whichever is greater.
Seasonally flowing or intermittent streams	The area on each side of the stream to a distance equal to the height of one site-potential tree or 30.5-m (100-ft.) slope distance, whichever is greater.
Wetlands less than one acre and unstable and potentially unstable areas	The extent of unstable and potentially unstable areas, and wetlands less than 0.4 ha (1 ac.) to the outer edges of the riparian vegetation.

In Regions 1 and 4, the Stream Management Zones are based on stream class, which is defined in the following two tables.

Table E-2: Present Water Buffer (Streamside Management Zone) Requirements for Region 1 Forest, Region 4 Forests, and Forests in the Upper Columbia River basin.

Stream Class	% side slope			
	0-20	21-40	41-60	61+
Class I	100 ft.*	150 ft.	200 ft.	250 ft.
Class II	75 ft.	100 ft.	150 ft.	175 ft.
Class III	50 ft.	75 ft.	100 ft.	125 ft.
Class IV	50 ft.	50 ft.	75 ft.	100 ft.

Table E-3: Stream Management Zones—Class Determinations for Stream Classes in Table E-2

Class	Determination
Class I Highly Significant	<p>These are either perennial or intermittent streams, or segments thereof, that meet one or more of the following criteria:</p> <ul style="list-style-type: none"> a. are habitat for large numbers of resident and/or migratory fish for spawning, rearing, or migration; b. furnish water locally for domestic or municipal supplies; c. have flows large enough to materially influence downstream water quality; d. are characterized by major fishing or other water-oriented recreational uses; e. have special classification or designation, such as wild, scenic, or recreation rivers; f. have special visual/distinctive landscape features, and are classified as variety Class A in <i>National Forest Landscape -Volume 2</i> (Agr. Handbook 462) ; g. are habitat for threatened or endangered animal species, or contain plants that are potential or viable candidates for threatened or endangered classification; and/or h. exhibit ethnological, historical, or archaeological evidence that makes them eligible for or included in the National Register of Historical Places.
Class II Significant	<p>These are either perennial or intermittent streams, or segments thereof, that meet one of more of the following criteria:</p> <ul style="list-style-type: none"> a. are used by moderate numbers of fish and spawning, rearing, or migration; b. furnish water locally for industrial or agricultural use; c. have enough water flow to exert a moderate influence on downstream quality; d. are used moderately for fishing and other recreational purposes; e. are of moderate visual quality and meet variety Class B as defined in <i>National Forest Landscape Management -Volume 2</i> (Agr. Handbook 462);and/or f. exhibit ethnological, historical, or archaeological evidence that makes them eligible for State or local registers of historical significance or interest.

Class	Determination
Class III Moderately Significant	These are either perennial or intermittent streams, or segments thereof, that meet one of more of the following criteria: a. are habitat for few fish or spawning, rearing, or migration; b. are rarely used for fishing or other recreational purposes; c. have enough water flow to exert minimum influence on downstream water quality; d. are of relatively low visual quality in the landscape and classified as variety Class B as defined in <i>National Forest Landscape Management - Volume 2</i> (Agr. Handbook 462); and/or e. exhibit historical or archaeological properties that are of archaeological interest in accordance with the Archaeological Resource Protection Act of 1979.
Class IV Minor significance	These are intermittent or ephemeral streams, or segments thereof, not previously classified.

In areas considered visually sensitive by the FS, we will consider the following mitigation measures.

- Leave sufficient vegetation—where possible—to screen view of right-of-way.
- Consider plantings of low-growing tree seedlings next to right-of-way, or softening the straight line of corridor edge by cutting additional trees.
- *If using herbicides*, consider the following to reduce large areas of dead browned vegetation: seasonal timing, herbicide selection , or application technique (limit use of broadcast foliar).

FS Background and Guidance Documents

Standards and Guidelines, as used by the FS, adhere to the following definitions:

Standard: *a condition of land, normally a maximum or minimum condition that is measurable. A standard can also be expressed as a constraint on management activities or practices. Standards are established on a forest-wide, subsection, and management prescription area basis to promote achievement of desired future conditions and objectives. Deviation from compliance with a standard requires a Forest Plan amendment (except for emergency situations . . .) (USDA/FS, 1993 via Targhee Plan, pg. III-2)*

***Guideline:** a preferred or advisable course of action that is generally expected to be carried out. Deviation from compliance with a guideline does not require a Forest Plan amendment, but the rationale for such a deviation shall be documented in the project decision document. Guidelines are established on a forestwide, subsection, and management prescription area basis to promote achievement of the desired future condition and objectives in an operationally flexible manner that responds to such variations as changing site conditions or changed management circumstances. (USDAFS, 1993 via Targhee Plan,*

Following is a list of selected documents and regulations that will guide the FS during consultations.

Background and Guidance Documents

- **Forest Plans** for the respective National Forests. Each National Forest has a Forest Plan that provides management direction. These Forest Plans specify allowable activities, minimum requirements, and expected outputs and land use allocations for a 10- to 15-year period, including Standards and Guidelines for how resources will be managed, special areas protected, and land use conflicts resolved.
- **A Guide to Conducting Vegetation Management Projects in the Pacific Northwest Region** (USDA/FS 1992a) – for Region 6. This guide is the result of a Mediated Agreement to lift an injunction against using herbicides in the region. The agreement and resulting Guide dictate how the Forests manage and conduct activities within the Forests. These guidelines not only allow for a different set of herbicides to be used in Region 6 than in the rest of the Northwest, but they have more documentation and public involvement steps than the other Regions.
- **Standards & Guidelines for Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl** (Northwest Forest Plan) (USDA/FS and USDOJ/BLM, 1994b). These documents provide standards and guidelines and land-use designations for all BLM and FS lands within the range of the northern spotted owl (parts of region 5 and 6). When located in this range, the FS and BLM must follow Forest Plan standards and guidelines if they are more restrictive or provide greater benefits to late-successional forest related species than do the district or forest specific plans.
- **Risk Assessment** - The FS Regions 1, 2, 3, 4, and 10 and Bonneville performed a joint risk assessment (Labat-Anderson, Inc., 1992). The FS intends to have the Forests use this herbicide risk assessment in appropriate NEPA analysis as they implement their Forest Plans.

- **The Interior Columbia River Basin Draft EISs and Appendices** (USDS/FS and USDO/BLM, 1997a and 1997b). These two planning documents include the Eastside EIS (covering eastern Oregon and Washington) and the Upper Columbia River Basin EIS (covering the Columbia River Basin in Idaho and Montana). These plans have yet to be adopted.

The elements of the Northwest Forest Plan most pertinent to Bonneville's vegetation management activities are (1) designation of Late-Successional Reserves, which are areas set aside for long-term protection as old-growth forests, and (2) the Aquatic Conservation Strategy, which outlines protection of riparian systems by establishing protection buffers referred to as riparian reserves.

Northwest Forest Plan Specifics

Late-Successional Reserves

The Northwest Forest Plan designated these reserves for the long-term protection of old-growth forests, based on five elements:

1. Areas mapped as part of an interacting reserve system;
2. Late-Successional/Old Growth¹ and 2 areas¹ within Marbled Murrelet Zone 1 and certain owl additions, mapped by the Scientific Panel on Late-Successional Forest Ecosystems (1991);
3. Sites occupied by marbled murrelets;
4. Known owl activity centers; and
5. Protection buffers for specific native species identified by the Scientific Analysis Team (1993).

The Northwest Forest Plan refers to utility corridors in late-successional reserves in a few places and states that "These developments might remain, consistent with other standards and guidelines. Routine maintenance of existing facilities is expected to have less effect on current old-growth conditions than development of new facilities."

Rare Species - In late-successional reserves, certain rare "survey and manage species" are designated for habitat protection. The species are classified as:

¹ "Most significant" old-growth, and "significant" old-growth, as mapped by the Scientific Panel on Late-Successional Forest Ecosystems, Johnson et al., 1991

- Federally threatened or endangered species;
- Federally proposed threatened or endangered species;
- Federal Candidate Species;
- State-listed species;
- FS sensitive species;
- BLM special status species;
- Other infrequently encountered species not considered by any agency or group as endangered or threatened and classified in the FEMAT Report as rare.

Land managers are required to take certain actions relative to rare “survey and manage species.” These actions include:

- Managing known sites of rare organisms;
- Surveying for presence of rare organisms prior to ground-disturbing activities;
- Conducting surveys to identify locations and habitats of rare species; and
- Conducting general regional surveys for rare species.

Species that might occur near Bonneville facilities are as follows:

- *Ptilidium californicum* (Liverwort) – very limited distribution in old white pine forests with fallen trees. It occurs on trunks of trees at about the 500-foot elevation level.
- *Ulota meglospora* (Moss) – occurs in northern California and southwest Oregon.
- *Otidea leporina*, *O. onotica*, and *O. smithii* (Fungi) – occur in conifer duff, are widespread in distribution but uncommon.
- Great Gray Owl – most common in lodgepole pine forests adjacent to meadows (Willamette National Forest west of the crest of the Cascade Range).

Managed Late-Successional Areas

These areas are similar to Late-Successional Reserves but are identified for certain owl locations in the drier provinces where regular and frequent fire is a natural part of the ecosystem. Managed Late-Successional Areas have been designated for standards and guidelines based on two elements: (1) Managed Pair Areas for known owl pairs and resident singles in the California Cascades and Washington Eastern Cascades Provinces (from the Final Draft Spotted Owl

Recovery Plan:); and (2) Protection Buffers for specific endemic species identified by the Scientific Analysis Team.

Managed owl pair areas are typically found on the east side of the Cascade Range. Suitable owl habitat in areas surrounding owl activity centers will be maintained through time using various management techniques.

“Survey and manage species” within Managed Late-Successional Areas are as follows:

- *Brotherella roellii* (Moss) – very rare species, endemic to the Washington Cascades north of Snoqualmie Pass.
- *Buxaumia piperi*, *B. viridis*, *Rhizomnium nudum*, *Schistostega pennata*, and *Tetraphis geniculata* (Mosses) – occurring on rotten logs and some organic soil; shade-dependent, occurring in old-growth forests. *S. pennata* occurs only in mature western red cedar forests in the Olympic National Forest and in the Washington Cascades.
- *Polyozellus multiplex* (Fungus) – occurring in higher elevations of the Cascades in silver fir and mixed conifer (and thus outside the range of marbled murrelet mitigation).
- *Sarcosoma mexicana* (Fungus) – occurring in deep conifer litter layers in older forests. It is common to rare and is found in the Oregon and Washington Coast Range into British Columbia.
- Larch Mountain Salamander – occurring mostly within the Columbia River Gorge.
- Del Norte Salamander – occurring in talus slopes protected by overstory canopy that maintains cool, moist conditions on the ground. Species is a slope-valley inhabitant, and sometimes occurs in high numbers near riparian areas.

Aquatic Conservation Strategy

The Aquatic Conservation Strategy is also found within the Northwest Forest Plan. It identifies standards and guidelines for several areas, including riparian reserves, key watersheds, watershed analysis, and watershed restoration.

Riparian Reserves – areas along all streams, wetlands, ponds, lakes, and unstable or potentially unstable areas where the conservation of aquatic and riparian-dependent terrestrial resources receives primary emphasis. The main purpose of the reserves is to protect the health of

the aquatic system and its dependent species; the reserves also provide incidental benefits to upland species. These reserves will help maintain and restore riparian structures and functions, benefit fish and riparian-dependent non-fish species, enhance habitat conservation for organisms dependent on the transition zone between up slope and riparian areas, improve travel and dispersal corridors for terrestrial animals and plants, and provide for greater connectivity of late-successional forest habitat.

See Table f-1 for definitions of various Riparian Reserves.

Riparian reserve initial boundary widths established by the FS's ROD will remain in effect until they are modified following watershed analysis.

- Standards and guidelines for Riparian Reserves prohibit or regulate activities that retard or prevent attainment of the Aquatic Conservation Strategy objectives. Watershed analysis and appropriate NEPA compliance is required to change Riparian Reserve boundaries in all watersheds.
- FS shall adjust existing leases, permits, rights-of-way, and easements to eliminate adverse effects that retard or prevent the attainment of Aquatic Conservation Strategy objectives. If adjustments are not effective, eliminate the activity. Priority for modifying existing leases, permits, rights-of-way and easements will be based on the actual or potential impact and the ecological value of the riparian resources affected.
- Fell trees in Riparian Reserves when they pose a safety risk.
- Keep felled trees on-site when needed to meet coarse woody debris objectives.
- Herbicides, insecticides, and other toxicants, and other chemicals shall be applied only in a manner that avoids impacts that retard or prevent attainment of Aquatic Conservation Strategy objectives.

Key Watersheds – A system of Key Watersheds serves as areas that provide, or are expected to provide high-quality habitat. Key Watersheds are identified by the Plan as crucial for maintaining and recovering habitat for at-risk stocks of anadromous salmonids and resident fish species.

Watershed Analysis - Watershed analysis is required prior to management activities, except minor activities such as those Categorically Excluded under NEPA (not including timber harvest). Watershed analysis is required prior to timber harvest.

Adaptive Management Areas

The Northwest Forest Plan also designates Adaptive Management Areas (AMAs). In Region 6, four (out of ten) managed AMAs have Bonneville facilities in or near them:

- the **Olympic AMA** in Jefferson, Clallam, Grays Harbor, and Mason Counties, Washington;
- **Snoqualmie Pass AMA** in Kittitas and King Counties, Washington;
- **Northern Coast Range AMA** in Polk, Yamhill, Tillamook and Washington Counties, Oregon;
- **Central Cascades AMA** in Lane and Linn Counties, Oregon.

For the reader's interest, we provide below a sample of standards and guidelines found in Forest Plans that might affect Bonneville's vegetation management program.

Samples of Standards and Guidelines from Forest Plans

Utilities and Transportation -- Some Forests have management areas specific to utilities and transportation such as the following:

- The existing corridors for the transmission of electricity will be managed in accordance with the standards for MA [Management Area] 23. (Kootenai NF, Forest Plan: (USDA/FS, 1987d, pg. II-25))
- MA23 is composed entirely of the existing electric transmission corridor on the south end of the forest which crosses along the south boundary of the Cabinet Mountains Wilderness Area. There is a low-standard access road providing repair and inspection access for the entire length. Vegetation varies from shrubs to small conifers. All acres are in grizzly situations 1 and 2. (Kootenai NF, Forest Plan (USDA/FS, 1987d,pg. II-113))
- Management Area 5: This management area consists of potential transportation and utility corridors that might be identified on the Lolo Forest. Existing and potential rights-of-way will be evaluated to determine if they are compatible with other facilities or uses. If they are determined to be capable of accommodating more than one facility they will be designated a right-of-way corridor (36 CFR 219.27 (a) (9)). (Lolo NF, Forest Plan (USDA/FS, 1986c, pg. III-14))
- Management Area 5 will consist of the land directly under and adjacent to the facility such as a pipeline or power line. As these corridors are identified, the acreages within them will be deleted

from the management areas they cross. This area generally has road access for construction and maintenance. Public use might be restricted. (Lolo NF, Forest Plan (USDA/FS, 1986c, pg. III-14))

- Limit right-of-way clearing for utility corridors to the extent necessary for safe and efficient use. (Siuslaw NF, Land & Resource Management Plan (USDA/FS, 1990d, pg.IV-55))
- Cooperate with utilities' representatives to develop strategies that will minimize the potential for a single- or multiple-line power outages that could result from catastrophic events such as wildfire. (Guideline) (Modoc NF, Land & Resource Management Plan (USDA/FS, 1991b, pg.4-17))
- In managing Forest activities near the utility corridor, coordinate with respective Federal or private utility managers to ensure that forest activities will not conflict with the intended permitted use and management of the utility corridor. (Standard) (Modoc NF, Land & Resource Management Plan (USDA/FS, 1991b, pg.4-17))

Visual – Visual resources, often a concern of the local Forest, become standards and guidelines in the Forest Plans. It is possible that leaving screens of vegetation, as described below, could conflict with keeping vegetation safely away from transmission lines or other facilities.

- . . . the impacts of management activities will be visually assessed from the nearest viewpoints contained in the sensitivity level maps on file. Vegetative and topographic screening will be used where possible to minimize visual impacts. cases. (Lolo NF, Forest Plan (USDA/FS, 1986c, pg. III-15))
- Meet assigned Visual Quality Objectives when activities are planned within the foreground zone of state Highway 139 and 299. Specific objectives are to:
 - * Blend treated vegetation with adjacent untreated areas for a natural appearance.
 - * No distinct edge between treated and untreated areas should be evident. (*Modoc NF, Land & Resource Management Plan (USDA/FS, 1991b, pg.4-24)*)

Vegetation management standards and guidelines vary for each Forest. Some examples of standards and guidelines are as follows:

- *For vegetation management and/or manipulation*, follow the Record of Decision, Managing Competing and Unwanted Vegetation, Final EIS, Pacific NW Region, December 1988 (or as amended), the Mediated Agreement, and implementation direction.

(Mt. Baker-Snoqualmie NF, Land & Resource Management Plan (USDA/USFA,1990g, pg. 4-135))

- Control noxious weeds to the extent practical. The following methods for control shall be used: mechanical, biological, access restrictions to prevent spread, seeding disturbed soil, and use of herbicides. Small infestations of new noxious weeds (e.g. tansy ragwort) should be eradicated as quickly as possible. (Mt. Baker-Snoqualmie NF, Land & Resource Management Plan (USDA/USFA,1990g))
- Where appropriate, use methods of vegetation treatment that emulate natural ecological processes to maintain or restore properly functioning ecosystems. (Targhee NF Forest Plan (USDA/FS, 1997b, pg. III-12))
- Preserve unique formations within a landscape (such as cliffs, bogs, seeps, talus slopes, warm or alkaline springs, pot holes, and rock outcroppings) that provide habitat to plant species not common to the overall landscape and contribute to the species diversity within the landscape. (Targhee NF Forest Plan (USDA/FS, 1997b, pg. III-14))

Wildlife and Fish – The FS and BLM have species other than threatened and endangered species that require special attention or protection.

"Indicator species" have been identified for those species groups whose habitat is most likely to be changed by Forest management activities. The tree-dependent group indicator species is the marten; the old growth dependent group is represented by the pileated woodpecker; and the riparian tree-dependent group indicator species is the barred owl. These species will be monitored to determine population changes resulting from forest management activities. Other indicator species include the threatened or endangered species (grizzly bear, gray wolf, bald eagle and peregrine falcon); commonly hunted species (mule deer, elk, and white-tailed deer); and fish species (bull trout and cutthroat trout). (*Flathead NF, Forest Plan (USDA/FS,1985, pg. II-21)*)

- Management Direction:

★ *Under the selected alternative, the Inland Native Fish Strategy will apply the following management direction to all 22 Forests except where PACFISH or the President's Plan apply. (Kootenai NF, Forest Plan (USDA/FS 1987d, Attachment pg. A-1))*

★ General Riparian Area Management: Apply herbicides, pesticides, and other toxicants, and other chemicals in a manner that does not retard or prevent attainment of riparian management objectives and avoids adverse effects on inland native fish. (Kootenai NF, Forest Plan (USDA/FS 1987d, Attachment pg. A-12))

- . . .Fish habitat and riparian management activities will be coordinated in order to provide suitable riparian vegetation to aquatic habitats. . . . (Flathead NF, Forest Plan (USDA/FS 1985, pg. II-21))
- *Biological evaluations shall be prepared on all significant projects and activities that have a probability of affecting gray wolves and their habitat. Project, activities, or land uses might proceed if a "No Effect" determination is made. If a "Might Adversely Affect" determination results, the project, activity, or land use will be either modified for compatibility, eliminated, terminated, or appropriate consultation procedures with the USFWS will be initiated. (Flathead NF, Forest Plan (USDA/FS ,1985, pg. II-37 f(1)))*
- Provide necessary protection and management to conserve listed threatened, endangered and sensitive plant species. (Targhee NF Forest Plan (USDA/FS, 1997b,pg. III-14))
- Information on the presence of listed threatened, endangered or sensitive plant species will be included in all assessments for vegetation and/or ground disturbing management activities. Appropriate protection and mitigation measures will be applied to the management activities. (Standard) (Targhee NF Forest Plan, (USDA/FS, 1997b. pg. III-14))
- Site specific analysis is needed for all projects. This includes addressing threatened endangered, and sensitive species of plants and animals as contained on the FS, R-1 list. Roads for access should be consistent with direction for MA23 and consider surrounding MAs and grizzly bear habitat needs.
- *In Riparian Area Management*: Apply herbicides, pesticides, and other toxicants, and other chemicals in a manner that does not retard or prevent attainment of riparian management objectives and avoids adverse effects on inland native fish. (Kootenai NF, Forest Plan (USDA/FS, 1987d, Attachment pg. A-12))

Cultural Resources -

- Inventory to identify cultural resource properties prior to any project, activity or license that might affect significant cultural resources consistent with the national Historic Preservation Act of 1966 (as amended) and other pertinent laws and regulations. Adjustments will be made to projects to comply with cultural resource laws. (standard) (Modoc NF, Land & Resource Management Plan (USDA/FS, 1991b, pg.4-14))

Soil and Water – Forest Plans have special requirements when operating around water.

- Stream Shading - Leave enough vegetation intact along perennial streams to limit solar heating of streams and maintain water temperatures within State water quality standards. (Siuslaw NF, Land & Resource Management Plan (USDA/FS, 1990d, pg. IV-53))
- Standards are designed to protect or improve the quality of the water resource. These practices, known as BMPs (Best Management Practices) use the best technology available. These practices are a result of laws, regulations, and good land stewardship. (Flathead NF Forest Plan (USDA/FS, 1985, pg. II-40))
- The forest has designated riparian management areas (Management Areas 12 and 17) and non-timber-producing areas where riparian ecosystems are protected. (Flathead NF Forest Plan (USDA/FS, 1985, pg. II-40))
- A watershed cumulative-effects feasibility analysis for projects involving significant vegetation removal is required prior to project implementation. This is to ensure that the project, considered with other activities, will not increase water yields or sediment beyond acceptable limits. Such analysis should identify opportunities, if any exist, for mitigating adverse effects on water related beneficial uses. (Flathead NF Forest Plan (USDA/FS, 1985, pg. II-41))

Soil and water requirements can be quite extensive, The requirements shown below are all from the same Forest Plan. One area can trigger many management plans.

- *Streamside management zones (SMZs) are determined by stream class, channel stability, and side-slope stability. Included in the SMZ are the channel (waterway and upper banks) and side slopes. The SMZ exceeds the area dominated by riparian vegetation. Although managing an SMZ width that includes 50 feet on either*

side of the channel is typical, managing SMZs of variable width affords more direct protection of riparian-dependent resources. (Modoc NF, Land & Resource Management Plan (USDA/FS 1991b, Appendix M pg. M-1))

Side-slope distances are determined by stream class and percent of side slope. The stream class is based on the relative importance or significance of a stream or segment, based on resource values and beneficial uses. The percent of side slope is inversely related to side slope stability (i.e. the higher the percent of side slope, the less the stability of the side slope). Streams that are more important or are less stable are assigned longer side slope distances and thus wider SMZs. (Modoc NF, Land & Resource Management Plan USDA/FS, 1991b, Appendix M pg. M-1))

At the project level, management standards are flexible so that widths might vary as additional information is learned about channel and side slope stability. Stream classes might also change as more information is collected about the stream. (Modoc NF, Land & Resource Management Plan (USDA/FS, 1991b, Appendix M pg. M-1))

The Modoc NF identifies **Water Quality Best Management Practices** (BMPs) to be used within resource categories. The following resource categories could potentially be affected by Bonneville's vegetation management program. Depending on the particular activity planned within the resource category, any of the listed BMPs could be appropriate practices and should be considered for use.

Resource category: Timber

BMP: Protection of Unstable Areas

Streamside Management Zone Designation

Special Erosion Prevention Measures on Disturbed Land

Revegetation of Areas Disturbed by Harvest Activities

Streamcourse Protection

Erosion Control Structure Maintenance

Slash Treatment in Sensitive Areas

Resource category: Road and Building Site Construction

BMP: Erosion Control Plan

- Disposal of Right-of-way and Roadside Debris
- Maintenance of Roads
- Road Surface Treatment to Prevent Loss of Materials
- Traffic Control during Wet Periods

Resource category: Vegetative Manipulation pg. N-3

BMP: Seed Drilling on the Contour

- Slope Limitations for Tractor Operation
- Tractor Operation Excluded from Wetlands and Meadows
- Revegetation of Surface Disturbed Areas
- Tractor Windrowing on the Contour
- Soil Moisture Limitations for Tractor Operation
- Contour Disking
- Pesticide Use Planning Process
- Apply Pesticide According to label and EPA Registration Directions
- Pesticide Application Monitoring and Evaluation
- Pesticide Spill Contingency Planning
- Cleaning and Disposal of Pesticide Containers and Equipment
- Untreated Buffer Strips for riparian area and Streamside Management Zone (SMZ) Protection during Pesticide Spraying
- Controlling Pesticide Drift during Spray Application

Resource category: Watershed Management pg. N-4

BMP: Protection of Wetlands

- Oil and Hazardous Substance Spill Contingency Plan
- Control of Activities under Special Use Permit
- Water Quality Monitoring

(This concludes the section on samples of FS standards and guidelines.)



This page intentionally left blank.